

Silt Fence - SF



DEFINITION

A silt fence is a temporary sediment barrier made of woven, synthetic filtration fabric supported by steel or wood posts.

PURPOSE

The purpose of a silt fence is to prevent sediment carried by sheet flow from leaving the site and entering natural drainage ways or storm drainage systems by slowing storm water runoff and causing the deposition of sediment at the structure. Silt fencing encourages sheet flow and reduces the potential for development of rills and gullies.

CONDITIONS

Silt fence should be installed where sheet flow runoff can be stored behind the barrier without damaging the barrier or the submerged area behind the barrier.

Silt fence should not be installed across streams, ditches, waterways, or other concentrated flow areas.

DESIGN CRITERIA

All silt fence should be installed along the contour, never up or down a slope.

Where all sheet flow runoff is to be stored behind the fence (where no storm water disposal system is present), maximum slope length behind a silt fence should not exceed those shown in Table 1. **The drainage area should not exceed 1/4 acre for every 100 feet of silt fence.**

Criteria for Silt Fence Placement

Land Slope (percent)	Maximum Slope Length Above Fence (feet)
<2	100
2 to 5	75
5 to 10	50
10 to 20	25
>20*	15

* In areas where the slope is greater than 20 %, a flat area length of 10 feet between the toe of the slope and the fence should be provided

Table 1

Source: GA SWCC

Type A Silt Fence - [SF-A]: This 36-inch wide filter fabric should be used on developments where the life of the project is six months or greater. See Figure 1.

Type B Silt Fence - [SF-B]: Though only 22-inches wide, this filter fabric allows the same flow rate as Type A silt fence. Type B silt fence should be limited to use on minor projects, such as residential home sites or small commercial developments where permanent stabilization will be achieved in less than six months. See Figure 2.

Type C Silt Fence - [SF-C]: Type C fence is 36-inches wide with wire reinforcement. The wire reinforcement is necessary because this fabric allows almost three times the flow rate as Type A silt fence. Type C silt fence should be used where runoff flows or velocities are particularly high or where slopes exceed a vertical height of 10 feet. See Figure 3.

Along stream buffers and other sensitive areas, two rows of Type C silt fence may be used.

Table 2 contains specific information concerning specification requirements for all three types of material.

CONSTRUCTION SPECIFICATIONS

Silt fence should be placed on the contour. On slopes with grades greater than 7%, the silt fence should be located at least 5 to 7 feet beyond the base. Turn the ends of the silt fence upslope so that a certain depth of storm water may be retained in front of the silt fence. The impounded depth should be at least 12 inches, but no more than the height of the silt fence. Hay or straw bales should be staked in place at the end of the row of silt fence as an emergency overflow. This will allow detained water, exceeding the capacity of the silt fence, to be filtered and released quickly (see Figure 4). **The bottom edge of silt fence must be entrenched and backfilled to be effective.**

The silt fence should be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth should be spliced together only at a supporting post, with a minimum 6-inch overlap, and securely sealed. See Figure 5 for splicing requirements.

Post installation should start at the center of the low-point (if applicable) with remaining posts spaced 6 feet apart for Type A and B silt fences and 4 feet apart for Type C silt fence. While Type A and B silt fences can be used with both wood and steel posts, only steel posts should be used with Type C silt fence due to the flow capacity of the fabric. See Table 3, for post size and fasteners requirements. See Figure 6 for fastener placement.

INSPECTION

Inspect silt fence before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Where sites have been finally or temporarily stabilized, such inspections may be conducted only once per month.

MAINTENANCE

Sediment should be removed once it has accumulated to one-half the original height of the barrier. Filter fabric should be replaced whenever it has deteriorated to such an extent that the effectiveness of the fabric is reduced (approximately six months). Silt fence should remain in place until disturbed areas have been permanently stabilized. All sediment accumulated at the fence should be removed and properly disposed of before the fence is removed.

Silt Fence Specifications

TYPE FENCE	A	B	C
Tensile Strength (Lbs. Min.) (1) (ASTM D-4632)	Warp - 120 Fill - 100	Warp - 120 Fill - 100	Warp - 260 Fill - 180
Elongation (% Max.) (ASTM D-4632)	40	40	40
AOS (Apparent Opening Size) (Max. Sieve Size) (ASTM D-4751)	#30	#30	#30
Flow Rate (Gal/Min/Sq. Ft.) (GDT-87)	25	25	70
Ultraviolet Stability (2) (ASTM D-4632 after 300 hours weathering in accordance with ASTM D-4355)	80	80	80
Bursting Strength (PSI Min.) (ASTM D-3786 Diaphragm Bursting Strength Tester)	175	175	175
Minimum Fabric Width (Inches)	36	22	36

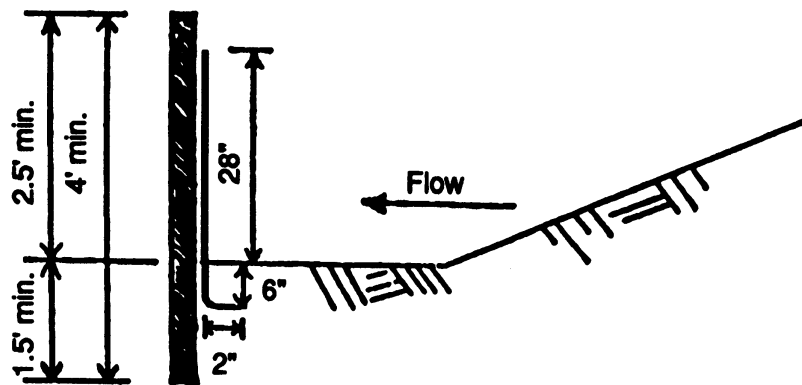
(1) Minimum roll average of five specimens.

(2) Percent of required initial minimum tensile strength.

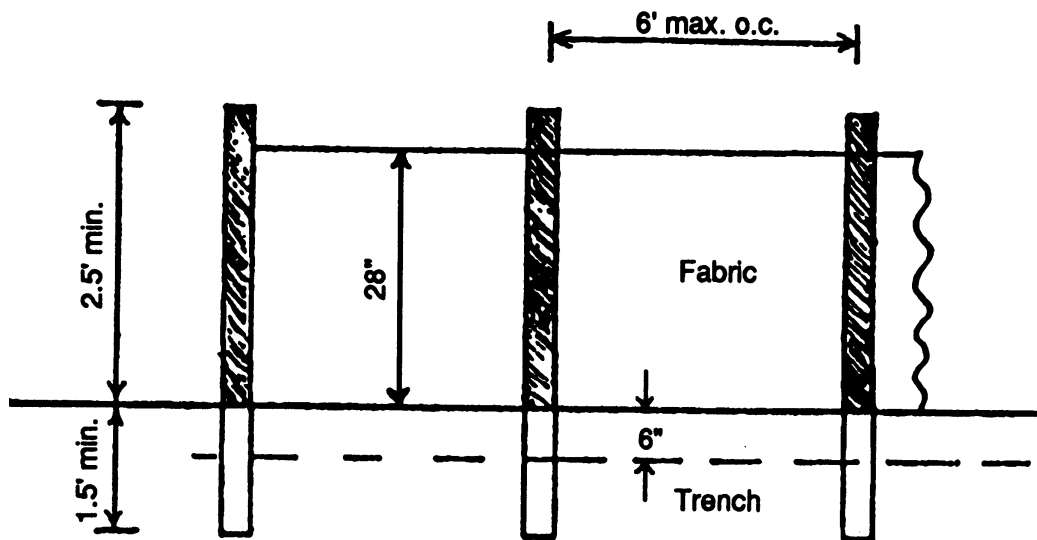
Table 2

Source: GA SWCC

Silt Fence – Type A



SIDE VIEW

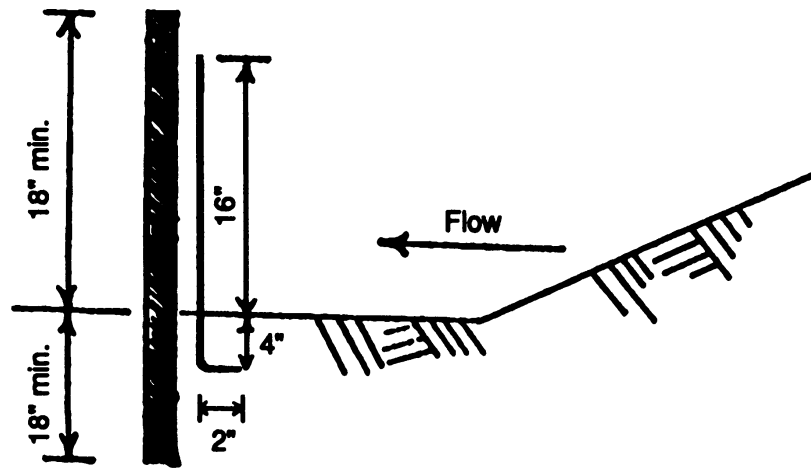


FRONT VIEW

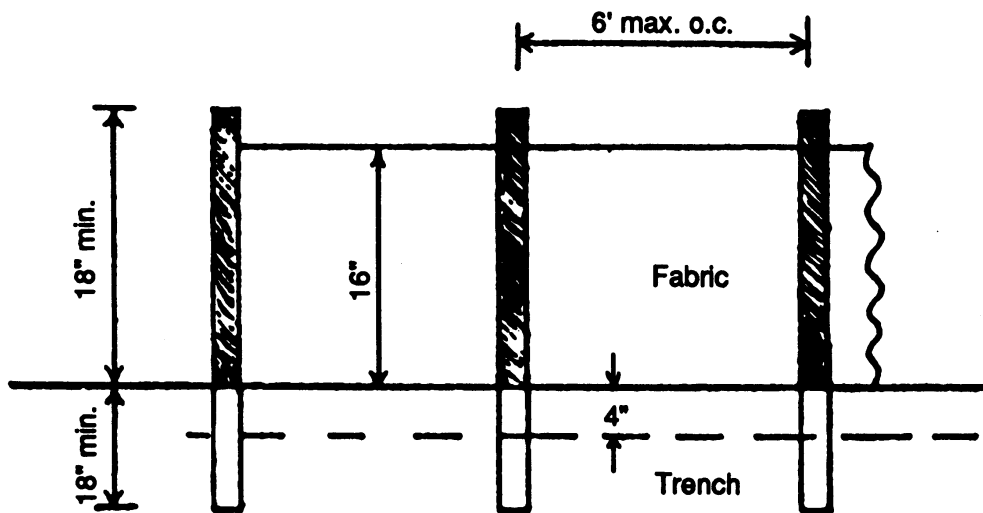
Figure 1

Source: GA SWCC

Silt Fence – Type B



SIDE VIEW



FRONT VIEW

Figure 2

Source: GA SWCC

Silt Fence – Type C

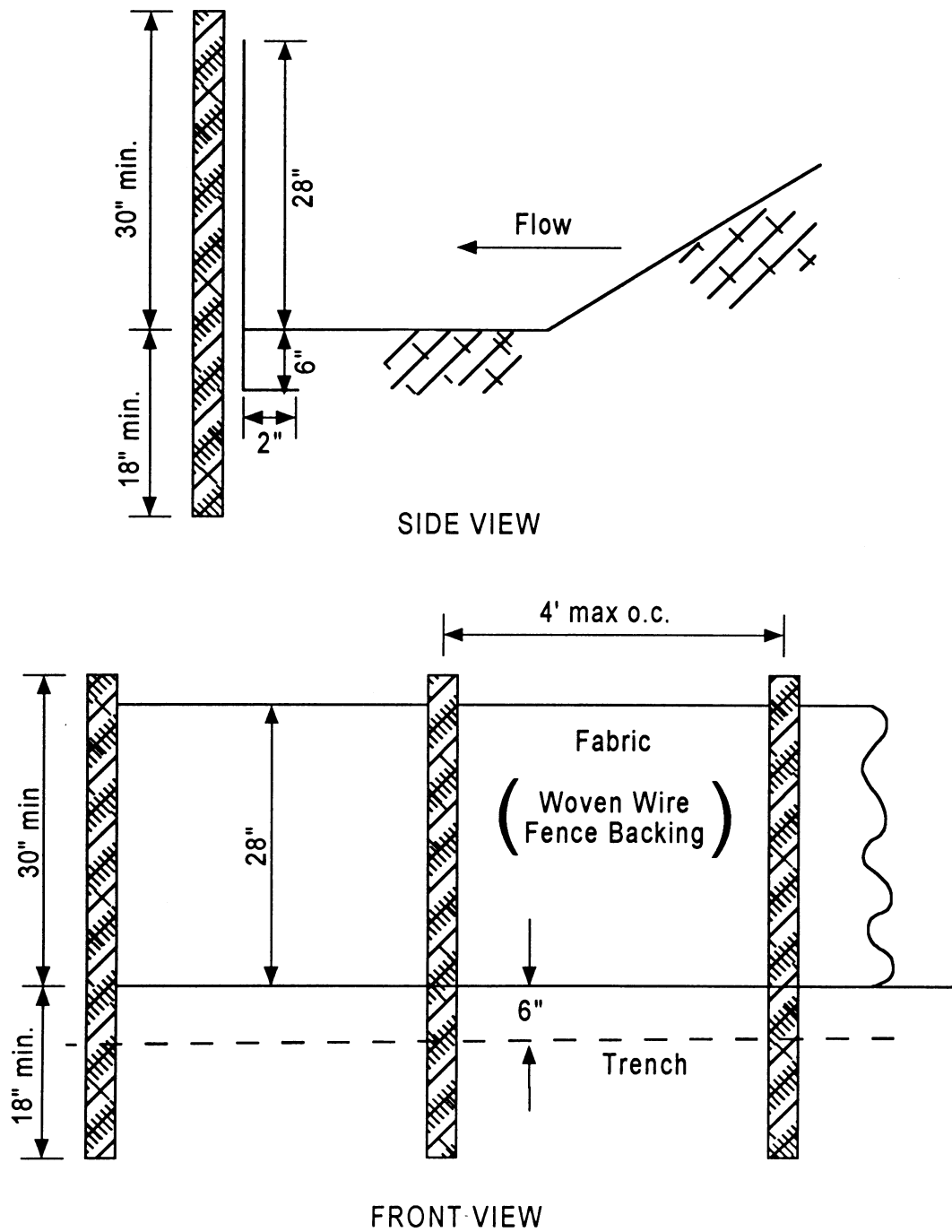


Figure 3

Source: GA SWCC

Silt Fence Below a Steep or Long Grade

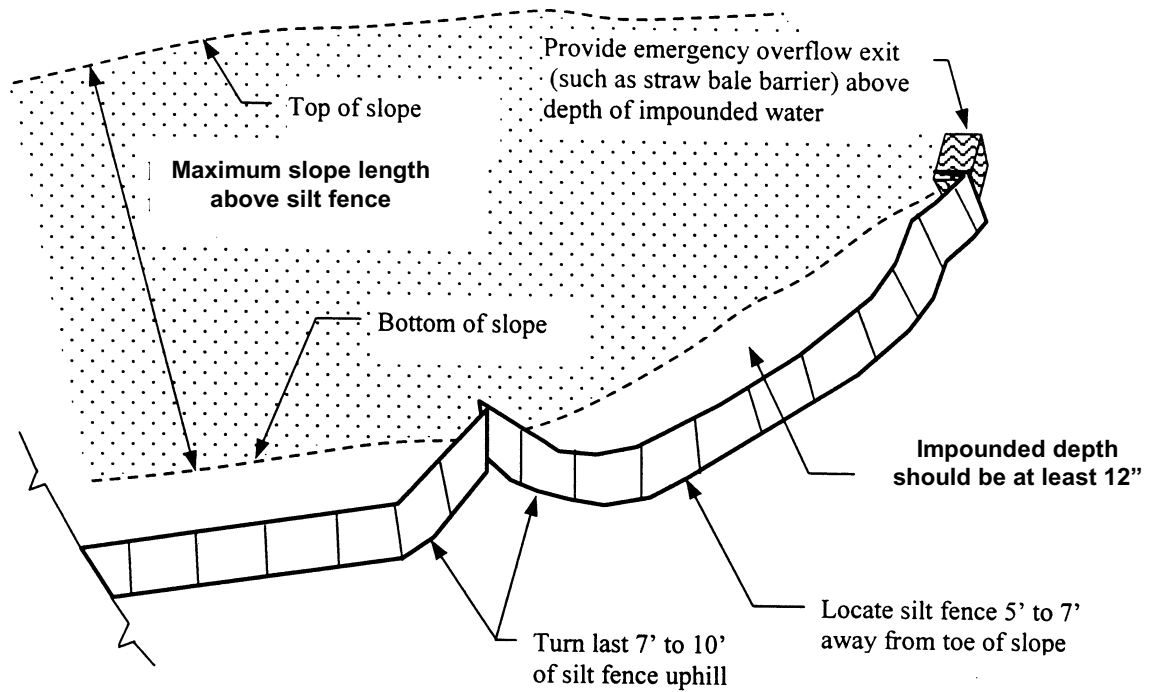


Figure 4

Source: Knoxville Engineering Department

Joining Silt Fence Sections

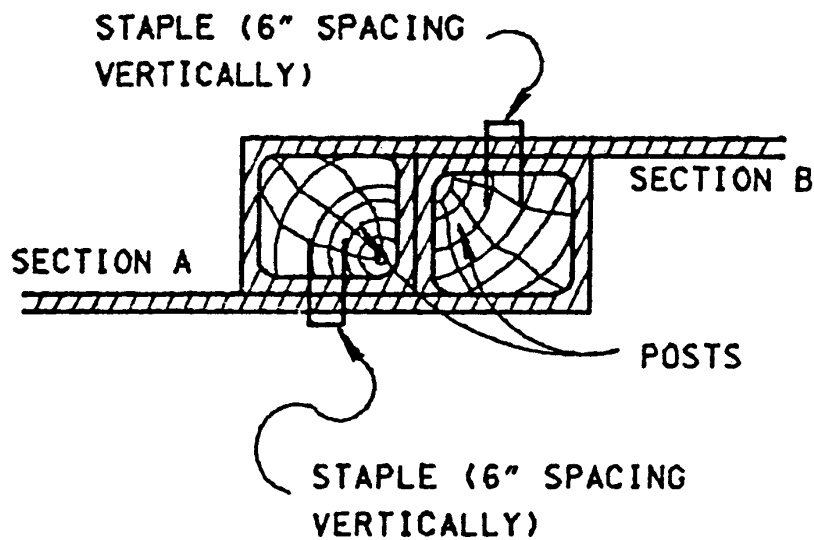


Figure 5

Source: TDOT English Standard Drawings

Post Size and Fastener Requirements

POST SIZE			
	Minimum Length	Type of Post	Size of Post
Type A	4'	Soft wood	3" dia. or 2x4
		Oak	1.5" x 1.5"
		Steel	1.3lb./ft. min.
Type B	3'	Soft wood	2" dia. or 2x2
		Oak	1" x 1"
		Steel	.75lb./ft. min.
Type C	4'	Steel	1.3lb./ft. min.

FASTENERS FOR WOOD POSTS				
	Gauge	Crown	Legs	Staples/Post
Wire Staples	17 min.	3/4" wide	1/2" long	5 min.
	Gauge	Length	Button Heads	Nail/Post
Nails	14 min.	1"	3/4"	4 min.
Note: Filter fabric may also be attached to the post by wire, cord, and pockets.				

Table 3

Source: GA SWCC

Fastener Placement

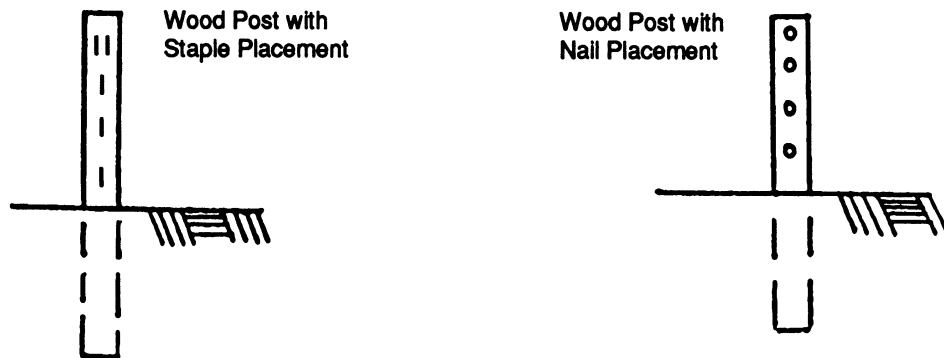


Figure 6

Source: GA SWCC